

Module 5: Illness and Injury

Lesson 5-1

Medical Emergencies

Objectives

Objectives Legend

C=Cognitive A=Affective P=Psychomotor

1 = Knowledge level

2 = Application level

3 = Problem-solving level

Cognitive Objectives

At the completion of this lesson, the First Aid student will be able to:

- 5-1.1 Identify the person who complains of a medical problem. (C-1)
- 5-1.2 Describe the steps in providing first aid to a person who complains of a medical problem. (C-1)
- 5-1.3 Describe the ill or injured person with a decreased level of responsiveness. (C-1)
- 5-1.4 Describe the steps in providing first aid to an ill or injured person with a decreased level of responsiveness. (C-1)
- 5-1.5 Describe a person having a seizure. (C-1)
- 5-1.6 Describe the steps in providing first aid to a person with seizures. (C-1)
- 5-1.7 Describe a person with medical problems resulting from exposure to cold. (C-1)
- 5-1.8 Describe the steps in providing first aid to a person with an exposure to cold. (C-1)
- 5-1.9 Describe a person with medical problems resulting from exposure to heat. (C-1)
- 5-1.10 Describe the steps in providing first aid to a person with an exposure to heat. (C-1)

Affective Objectives

At the completion of this lesson, the First Aid student will be able to:

- 5-1.11 Demonstrate a caring attitude towards a person who complains of a medical problem. (A-3)
- 5-1.12 After rescuer safety is assured, place the interests of the person with a medical problem as the foremost consideration when making emergency care decisions. (A-3)

Psychomotor Objectives

At the completion of this lesson, the First Aid student will be able to:

- 5-1.13 Demonstrate the steps in providing first aid to a person who complains of a medical problem. (P-1,2)
- 5-1.14 Demonstrate the steps in providing first aid to an ill or injured person with a decreased level of responsiveness. (P-1,2)
- 5-1.15 Demonstrate the steps in providing first aid to a person with seizures. (P-1,2)
- 5-1.16 Demonstrate the steps in providing first aid to a person with an exposure to cold/heat. (P-1,2)

Preparation

Motivation:

A person may complain of various medical problems. The First Aid Provider must be prepared to provide appropriate first aid to persons with medical problems that they may encounter.

Prerequisites:

Preparatory, Airway, Ill or injured person Assessment, and Circulation Modules

Materials

AV Equipment:

Utilize various audio-visual materials relating to first aid. The continuous development of new audio-visual materials relating to first aid requires careful review to determine which best meet the needs of the program. Materials should be edited to ensure that the objectives of these guidelines are met.

Equipment (Optional):

Personal protective equipment, hot and cold packs, and a blanket.

Recommended Minimum Time to Complete:

See page 12 of *Course Guide*

Presentation

Declarative (What)

- I. General Medical Problems
 - A. Ill persons may request first aid for a variety of reasons.
 - B. The First Aid Provider should assess each ill person to determine the signs and symptoms.
 - C. First aid is based on the ill person's signs and symptoms.
 1. **Warning Signs and Symptoms when EMS should be called immediately.**
 - a. **Pain, severe pressure, or discomfort in the chest.**
 - b. **Breathing difficulty or shortness of breath**
 - c. **Abdominal Pain**
 - d. **Decreased level of responsiveness**
 - D. Role of the First Aid Provider
 1. Complete the First Aid Provider assessment
 - a. Complete a scene assessment and use appropriate BSI equipment before initiating first aid.
 - b. Complete an initial assessment on all ill persons.
 - c. Assure that EMS is activated.
 - d. Complete the physical assessment (optional).
 - e. Complete on-going assessments.
 2. Comfort, calm, and reassure the ill person while awaiting EMS.
- II. Specific Medical Problems
 - A. Decreased level of responsiveness.

A sudden or gradual decrease in the ill or injured person's level of responsiveness and understanding ranging from confusion to unresponsive.

 1. There are many reasons for ill or injured persons having a decreased level of responsiveness:
 - a. Heart Problems
 - b. Stroke
 - c. Poisoning - including drugs and alcohol
 - d. Low blood sugar or Diabetic problem
 - e. Fever
 - f. Head injury

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- g. Decreased levels of oxygen in the brain
 - h. Psychiatric conditions
 - i. Infections
- 3. Support the ill or injured person; do not worry about determining the cause of the decreased level of responsiveness; maintain scene safety.
- 4. The length of the decreased level of responsiveness may be brief or prolonged.
- 5. Role of the First Aid Provider:
 - a. Complete the First Aid Provider assessment;
 - (1) Complete a scene assessment and use appropriate BSI equipment before initiating first aid.
 - (2) Complete an initial assessment on all ill or injured persons.
 - (3) Assure that EMS is activated.
 - (4) Complete the physical assessment (optional).
 - (5) Complete on-going assessments.
 - b. Comfort, calm, and reassure the ill or injured person while awaiting EMS.
 - (1) Assure an open airway.
 - (2) Place person in the recovery position if no possibility of spine trauma.
 - (3) Do not put anything in the ill or injured person's mouth.
- 6. Relationship to airway management
 - a. Often ill or injured persons with decreased level of responsiveness cannot protect their own airway.
 - b. The unresponsive, uninjured person should be placed in the recovery position.

<p>The following material in lesson 5-1 is supplemental to the First Aid Provider Core Elements (listed in the Course Guide). This information should be included if it is useful and/or necessary for the First Aid Provider in his or her occupational setting.</p>

- B. Seizures
 - 1. A sudden attack, usually related to nervous system failure.
 - 2. There are many types of seizures.
 - 3. There are many causes of seizures.
 - a. Chronic medical conditions
 - b. Fever
 - c. Infections
 - d. Poisoning including drugs and alcohol
 - e. Low blood sugar or diabetic problem
 - f. Head injury
 - g. Decreased levels of oxygen
 - h. Brain tumors
 - i. Complications of pregnancy
 - j. Failure to take medication or inadequate anti-seizure medication
 - k. Unknown causes
 - 4. Support the person; do not worry about determining the cause of the seizure.
 - 5. Some seizures produce violent muscle contractions called convulsions.
 - a. Most persons are unresponsive and may vomit during the convulsion.

- b. Persons who have had a seizure are typically tired and sleep following the attack.
 - 6. Seizures are rarely life-threatening. However, they may indicate a more serious medical condition.
 - 7. The length of the seizure may be brief (less than 5 minutes) or prolonged.
 - 8. Role of the First Aid Provider;
 - a. Complete the First Aid Provider assessment.
 - (1) Complete a scene assessment and use appropriate BSI before initiating first aid.
 - (2) Complete an initial assessment on all ill persons.
 - (3) Assure that EMS is activated.
 - (4) Complete the physical assessment (optional).
 - (5) Complete on-going assessments.
 - b. Comfort, calm, and reassure the person while awaiting EMS.
 - (1) Protect the person from the environment and injury.
 - (2) Protect modesty - ask bystanders to leave the area.
 - (3) Assure an open airway.
 - (4) Place person in the recovery position if no possibility of spine trauma.
 - (5) Never restrain the person.
 - (6) Do not put anything in the person's mouth.
 - (7) If the person is bluish following seizure, assure an open airway, assess breathing and ventilate if the person is not breathing.
 - (8) Report assessment findings to EMS.
 - (9) Observe and describe the seizure to EMS. This may help EMS determine the cause of seizure.
 - 9. Relationship to airway management
 - a. Often person having a seizure will have airway compromise because of oral secretions.
 - b. It is essential that these persons be placed in the recovery position when convulsions have ended.
- C. Exposure to cold
 - 1. Generalized cold emergency
 - a. Contributing factors;
 - (1) Cold environment
 - (2) Age (very old/very young)
 - (3) Medical conditions
 - (4) Alcohol/drugs/poisons
 - b. Signs and symptoms of generalized hypothermia;
 - (1) Obvious exposure
 - (2) Non-obvious exposure
 - (3) Cool/cold skin temperature
 - (4) Shivering
 - (5) Decreasing level of responsiveness or motor function - relates to the seriousness of hypothermia.
 - (a) Poor coordination
 - (b) Memory disturbances/confusion
 - (c) Reduced or loss of touch sensation
 - (d) Mood changes
 - (e) Less communicative
 - (f) Dizziness
 - (g) Speech difficulty

- (6) Poor judgment - person may actually remove clothing.
 - (7) Problems of joint/muscle stiffness.
 - 2. Role of the First Aid Provider:
 - a. Complete the First Aid Provider assessment.
 - (1) Complete a scene assessment and use appropriate BSI equipment before initiating first aid.
 - (2) Complete an initial assessment on all ill or injured persons.
 - (3) Assure that EMS is activated.
 - (4) Complete the physical assessment (optional)
 - (5) Complete on-going assessments.
 - b. Comfort, calm, and reassure the person while awaiting EMS.
 - (1) Assess pulses for 30-45 seconds before starting CPR.
 - (2) Remove the person from the cold environment.
 - (3) Protect the ill or injured person from further heat loss.
 - (4) Remove any wet clothing and cover the person with a blanket.
 - (5) Handle the person very gently.
 - (6) The person should not be given anything by mouth.
 - (7) Do not massage extremities.
- D. Exposure to heat
 - 1. Influencing factors:
 - a. High ambient temperature reduces the body's ability to lose heat by radiation.
 - b. High relative humidity reduces the body's ability to lose heat through evaporation.
 - c. Exercise and activity - can lose more than 1 liter of sweat per hour.
 - d. Age (very old/very young).
 - e. Pre-existing illness and/or conditions.
 - f. Drugs/medications.
 - 2. Signs and symptoms
 - a. Skin may be pale, cool and wet or red, dry and hot.
 - b. Muscular cramps
 - c. Weakness or exhaustion
 - d. Dizziness or faintness
 - e. Rapid heart rate
 - f. Decreased level of responsiveness.
 - 3. Role of the First Aid Provider:
 - a. Complete the First Aid Provider assessment.
 - (1) Complete a scene size-up and use appropriate BSI equipment before initiating first aid.
 - (2) Complete an initial assessment on all ill or injured persons.
 - (3) Assure that EMS is activated.
 - (4) Complete the physical assessment (optional).
 - (5) Complete on-going assessments.
 - b. Comfort, calm, and reassure the person while awaiting EMS.
 - (1) Remove the person from the hot environment and place in a cool environment (air conditioned).
 - (2) Apply cool packs or wet towels/sheets to the person's neck, groin and armpits.
 - (3) Cool person by fanning, but may be ineffective in high humidity.
 - (4) Place in recovery position.

Application

Procedural (How)

1. Demonstrate the steps in providing first aid to a person with a general medical problem.
2. Demonstrate the steps in providing first aid to an ill or injured person with a decreased level of responsiveness.
3. Demonstrate the steps in providing first aid to a person with seizures.
4. Demonstrate the steps in providing first aid to a person exposed to cold.
5. Demonstrate the steps in providing first aid to a person exposed to heat.

Contextual (When, Where, Why)

The First Aid Provider will now be able to provide appropriate emergency care to persons with general and specific medical problems.

Student Activities

Auditory (Hearing)

1. The student should hear presentations of the signs, symptoms, and first aid for persons with general medical problems.
2. The student should hear presentations of the signs, symptoms, and first aid for ill or injured persons with decreased level of responsiveness.
3. The student should hear presentations of the signs, symptoms, and first aid for persons with seizures.
4. The student should hear presentations of the signs, symptoms, and first aid for persons exposed to cold.
5. The student should hear presentations of the signs, symptoms, and first aid for persons exposed to heat.

Visual (Seeing)

1. The students should see visual representations of persons with general medical problems.
2. The students should see visual representations of ill or injured persons with an decreased level of responsiveness.
3. The students should see visual representations of persons with seizures.
4. The students should see visual representations of persons exposed to cold.
5. The students should see visual representations of persons exposed to heat.

Kinesthetic (Doing)

1. The students should role play first aid of a person with a general medical problem.
2. The students should role play first aid of an ill or injured person with decreased level of responsiveness.
3. The students should role play first aid of a person with a seizure.
4. The students should role play first aid of a person exposed to cold.
5. The students should role play first aid of a person exposed to heat.

Instructor Activities

Facilitate discussion and supervise practice.
Reinforce student progress in cognitive, affective, and psychomotor domains.
Redirect students having difficulty with content.

Evaluation

Evaluate the actions of First Aid students during role play, practice or other skill stations to determine their comprehension of the cognitive and affective objectives and reasonable proficiency with the psychomotor objectives.

Remediation

Identify students or groups of students who are having difficulty with this subject content.

Enrichment

Address unique student requirements or local area needs concerning this topic.

Lesson 5-2

Bleeding, Shock and Soft Tissue Injuries

Objectives

Objectives Legend

C=Cognitive A=Affective P=Psychomotor

1 = Knowledge level

2 = Application level

3 = Problem-solving level

Cognitive Objectives

At the completion of this lesson, the First Aid student will be able to:

- 5-2.1 Distinguish between minor and major bleeding. (C-3)
- 5-2.2 Describe the first aid for external bleeding. (C-1)
- 5-2.3 Explain the importance of body substance isolation. (C-3)
- 5-2.4 Describe the signs of internal bleeding. (C-1)
- 5-2.5 Describe first aid for an injured person with signs and symptoms of internal bleeding. (C-1)
- 5-2.6 Describe types of open soft tissue injuries. (C-1)
- 5-2.7 Describe the first aid for a soft tissue injury. (C-1)
- 5-2.8 Describe the first aid for a penetrating chest injury. (C-1)
- 5-2.9 Describe the first aid for an impaled object. (C-1)
- 5-2.10 Describe the first aid for an amputation. (C-1)
- 5-2.11 Describe the first aid for burns. (C-1)
- 5-2.12 Describe the functions of dressing and bandaging. (C-1)

Affective Objectives

At the completion of this lesson, the First Aid student will be able to:

- 5-2.14 Describe the reason for body substance isolation when dealing with bleeding and soft tissue injuries. (A-3)
- 5-2.15 Demonstrate a caring attitude towards injured persons with a soft tissue injury or bleeding. (A-3)
- 5-2.16 After rescuer safety is assured, place the interests of the person with a soft tissue injury, bleeding or shock as the foremost consideration when making emergency care decisions. (A-3)

Psychomotor Objectives

At the completion of this lesson, the First Aid student will be able to:

- 5-2.17 Demonstrate direct pressure for external bleeding. (P-1,2)
- 5-2.18 Demonstrate the use of pressure dressings for external bleeding. (P-1,2)
- 5-2.19 Demonstrate the use of pressure points for external bleeding. (P-1,2)

Preparation

Motivation:

Trauma is another word for sudden physical injury. Unexpected injuries are responsible for more than 120,000 deaths annually in the United States. Each year one in three people will receive an injury requiring medical treatment. More Americans under the age of 34 die from injuries than any other cause. Traumatic injury with external bleeding is a situation that the First Aid Provider may encounter.

Uncontrolled internal or external bleeding reduces the volume of circulating oxygenated blood and results in shock. Shock can also be caused by heart failure, damage to the spinal cord and system wide infection. Shock is a complex physiological condition but has a simple outcome, lack of oxygen to body tissues and death if not treated promptly. The early control of major bleeding may limit shock and has great life saving potential.

Soft tissue injuries range from simple abrasions to serious full thickness burns. It is necessary for the First Aid Provider to become familiar with the first aid of soft tissue injuries with emphasis on controlling bleeding, preventing further injury, and reducing contamination.

Prerequisites:

Preparatory, Airway, Ill or injured person Assessment, and Circulation Module

Materials

AV Equipment:

Utilize various audio-visual materials relating to first aid . The continuous development of new audio-visual materials relating to first aid requires careful review to determine which best meet the needs of the program. Materials should be edited to ensure that the objectives of these guidelines are met.

Equipment:

Personal protective equipment, dressings, self-adherent roller bandages.

Recommended Minimum Time to Complete:

See page 12 of *Course Guide*

Presentation

Declarative (What)

- I. Bleeding
 - A. General considerations
 1. The First Aid Provider must be aware of the risk of infectious disease from contact with blood or body fluids.
 2. The body's normal response to bleeding is blood vessel contractions and clotting.
 3. A serious injury may prevent effective clotting from occurring.
 4. Uncontrolled bleeding (internal or external) or significant blood loss leads to shock and possibly death.

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5. Internal bleeding often results from blunt and/or penetrating trauma.
6. Recognizing the mechanism of injury (MOI) and early signs of shock may prevent unnecessary death.
- B. Types of external bleeding
 1. Arterial
 - a. The blood spurts from the wound.
 - b. Bright, red, oxygen rich blood.
 - c. Arterial bleeding is the most difficult to control because of the pressure at which arteries bleed.
 2. Venous
 - a. The blood flows as a steady stream.
 - b. Dark, oxygen poor blood.
 - c. Bleeding from a vein can be profuse; however, in most cases it is easier to control.
 3. Role of the First Aid Provider
 - a. Complete the First Aid Provider assessment
 - (1) Complete a scene assessment and use appropriate BSI equipment before initiating first aid.
 - (2) Complete an initial assessment on all injured persons.
 - (3) Assure that EMS is activated (if needed).
 - (4) Complete a physical assessment (optional).
 - (5) Complete on-going assessments.
 - b. Comfort, calm, and reassure the ill or injured person while awaiting EMS.
 - (1) Recall priorities of care -provide constant and ongoing assessment of airway, breathing and circulation(ABC's).
 - (2) Bleeding control;
 - (a) Apply finger tip pressure (use flat part of fingers) directly on the point of bleeding.
 - (b) If no injury to the muscle or bone exists, elevation of a bleeding extremity may be used secondary to and in conjunction with direct pressure.
 - (c) Large gaping wounds may require clean dressings and direct hand pressure if finger tip pressure fails to control bleeding.
 - (d) If bleeding does not stop, or more than one site of bleeding is discovered, apply additional direct pressure and pressure dressings.
 - (e) When direct pressure and additional dressing do not control the bleeding, a pressure point may be combined with direct pressure.
- C. Internal bleeding
 1. Injured or damaged internal organs commonly lead to extensive bleeding that is hidden.
 2. Painful, swollen, deformed extremities may also lead to serious internal blood loss.
 3. Signs/symptoms
 - a. Discolored, tender, swollen, or hard tissue
 - b. Increased respiratory and pulse rates
 - c. Pale, cool skin
 - d. Nausea and vomiting
 - e. Thirst
 - f. Changes in level of responsiveness.
 4. Role of the First Aid Provider;

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- a. Complete the First Aid Provider assessment
 - (1) Complete a scene assessment and use appropriate BSI before initiating first aid.
 - (2) Complete an initial assessment on all injured persons.
 - (3) Assure that EMS is activated.
 - (4) Complete a physical assessment (optional).
 - (5) Complete on-going assessments.
 - b. Comfort, calm, and reassure the injured person while awaiting EMS.
 - (1) Recall priorities of care -provide constant and ongoing assessment of airway, breathing and circulation(ABC's).
 - (2) Manage any external bleeding.
 - (3) Reassure the ill or injured person.
 - (4) Keep the person calm and in position of comfort.
 - (5) Keep the person warm.
 - (6) Treat for shock.
- II. Shock
 - A. Condition resulting from the inadequate delivery of oxygenated blood to body tissues caused by;
 - 1. Failure of the heart to provide oxygenated blood
 - 2. Abnormal dilation of the vessels
 - 3. Blood volume loss
 - B. The First Aid Provider should anticipate that most seriously ill or injured persons will develop shock.
 - 1. Maintaining an open airway, assuring adequate breathing, monitoring pulse and controlling bleeding (initial and on-going assessment) is the most effective way a First Aid Provider can manage shock.
 - C. Signs and symptoms
 - 1. Restlessness, anxiety
 - 2. Changes in level of responsiveness
 - 3. Pale, cool, moist skin
 - 4. Rapid, shallow breathing
 - 5. Rapid, weak pulse
 - 6. Extreme thirst
 - D. Role of the First Aid Provider
 - 1. Complete the First Aid Provider assessment
 - a. Complete a scene assessment and use appropriate BSI before initiating first aid.
 - b. Complete an initial assessment on all ill or injured persons.
 - c. Assure that EMS is activated.
 - d. Complete a physical assessment (optional).
 - e. Complete on-going assessments.
 - 2. Comfort, calm, and reassure the ill or injured person while awaiting EMS.
 - a. Recall priorities of care -provide constant and ongoing assessment of airway, breathingand circulation (ABC's).
 - b. Prevent further blood loss.
 - c. Keep person calm, in position of comfort.
 - d. Keep person warm - attempt to maintain normal body temperature.
 - e. Do not give food or drink.
 - f. Provide care for specific injuries.

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Lesson 5-2: Bleeding, Shock and Soft Tissue Injuries

The following material in lesson 5-2 is supplemental to the First Aid Provider Core Elements (listed in the Course Guide). This information should be included if it is useful and/or necessary for the First Aid Provider in his or her occupational setting.

III. Specific Injuries

A. Wounds

1. Abrasion
 - a. Outermost layer of skin is damaged by shearing forces.
 - b. Painful injury, even though superficial.
 - c. No or very little oozing of blood.
2. Laceration
 - a. Break in skin of varying depth
 - b. May occur separately or together with other types of soft tissue injury.
 - c. Caused by forceful impact with sharp object.
 - d. Bleeding may be severe.
3. Penetration/puncture
 - a. Caused by objects such as knives, bullets, nails, etc..
 - b. May be little or no external bleeding.
 - c. Internal bleeding may be severe.
 - d. Exit wound may be present.
4. Role of the First Aid Provider:
 - a. Complete the First Aid Provider assessment
 - (1) Complete a scene assessment and use appropriate BSI equipment before initiating first aid.
 - (2) Complete an initial assessment on all ill or injured persons.
 - (3) Assure that EMS is activated (if needed).
 - (4) Complete a physical assessment (optional).
 - (5) Complete on-going assessments.
 - b. Comfort, calm, and reassure the injured person while awaiting EMS.
 - (1) Recall priorities of care -provide constant and ongoing assessment of airway, breathing and circulation(ABC's).
 - (2) Expose the wound.
 - (3) Control the bleeding.
 - (4) Prevent further contamination.
 - (5) Apply clean dressing to the wound and bandage securely in place.

B. Special considerations

1. Chest injuries:
 - a. An airtight dressing should be applied to open wounds to prevent air from entering the chest.ⁱ
 - b. Position of comfort if no spinal injury suspected.
2. Impaled objects

ⁱ Three-sided taping to allow for the release of air from the pleural space (tension pneumothorax) is unnecessary when EMS is readily available. First Aid Providers should prevent further intrusion of air via airtight dressings and continuing support of the ABC's. When EMS is *not* readily available, it may be necessary to present supplemental information on releasing air from the pleural space.

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- a. Do not remove the impaled object unless it is through the cheek and obstructs breathing.
 - b. Manually secure the object.
 - c. Expose the wound area.
 - d. Control bleeding.
 - e. Utilize a bulky dressing to help stabilize the object.
 - 3. Amputations
 - a. Involves the extremities and other body parts
 - b. Massive or minimal bleeding may be present.
 - c. Locate and preserve the amputated part.
 - d. Place the part in a plastic bag and place on ice.
- C. Burns
 - 1. Classification
 - a. According to depth
 - b. Superficial involves only the outer layer of the skin
 - (1) Reddening of the skin
 - (2) Swelling
 - c. Partial thickness involves the outer and middle layer of the skin
 - (1) Deep intense pain
 - (2) Reddening, blisters
 - d. Full thickness extends through all layers of the skin
 - (1) Characteristics of partial thickness
 - (2) Areas of charred skin
 - 2. Role of the First Aid Provider:
 - a. Complete the First Aid Provider assessment
 - (1) Complete a scene size-up and use appropriate BSI equipment before initiating first aid.
 - (2) Complete an initial assessment on all injured persons.
 - (3) Assure that EMS is activated.
 - (4) Complete a physical assessment (optional).
 - (5) Complete on-going assessments.
 - b. Comfort, calm, and reassure the injured person while awaiting EMS.
 - (1) Recall priorities of care -provide constant and ongoing assessment of airway, breathing and circulation (ABC's).
 - (2) If skin is hot, cool water may be used initially to cool the burn.
 - (3) To prevent further contamination use clean (or sterile) water and clean dressings to minimize the risk of infection.
 - (4) Cover the burned area with a dry sterile dressing if available.
 - (5) Do not use any type of ointment, lotion, or antiseptic.
 - (6) Do not break blisters.
 - 3. Special Considerations
 - a. Exposure to fire and hot gases.
 - (1) Stop the burning process with water.
 - (2) Remove smoldering clothing and restrictive jewelry.
 - (a) Be aware that some clothing may have melted to the skin.
 - (b) If resistance is met when removing the clothing, it should be left in place.
 - (3) Continually monitor the airway. It may become

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- obstructed due to swelling from inhalation of smoke or hot gases.
 - b. Chemical burns
 - (1) Scene safety
 - (2) Gloves and eye protection
 - (3) Brush off dry powder.
 - (4) Flush with copious amounts of water.
 - (5) Consider eye burns if splash injury.
 - (6) Remove contaminated clothing and jewelry.
 - c. Electrical burns
 - (1) Scene safety
 - (2) Severe internal injuries may occur.
 - (3) Monitor the injured person closely for respiratory or cardiac arrest.
 - (4) All persons sustaining contact with electricity should be evaluated by professional health care providers.
 - d. *Optional - Infant and Children*
 - (1) *Burns in infants/children are generally considered more serious than in adults.*
 - (2) *Infants/children are more likely to go into shock, develop hypothermia and experience airway problems.*
- IV. Dressing and Bandaging
- A. Function
 - 1. Stop bleeding.
 - 2. Protect the wound from further damage.
 - 3. Prevent further contamination and infection.
 - B. Dressings
 - 1. Universal dressing
 - 2. Gauze pads
 - 3. Adhesive-type
 - 4. Airtight
 - C. Bandages
 - 1. Holds dressing in place
 - 2. Types
 - a. Self-adherent bandages
 - b. Gauze rolls
 - c. Triangular bandages
 - d. Adhesive tape

Application

Procedural (How)

1. Review the methods of controlling external bleeding with an emphasis on body substance isolation.
2. Demonstrate first aid for an open soft tissue injury.
3. Demonstrate the necessary body substance isolation when dealing with soft tissue injuries.
4. Demonstrate the proper method for applying an airtight dressing.
5. Demonstrate the proper method for stabilizing an impaled object.
6. Show visual representations of superficial, partial thickness, and full thickness burns.
7. Demonstrate the first aid for a superficial, partial thickness, and full thickness burn.

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8. Show the various types of dressings and bandages.
9. Demonstrate the method for applying dressings.
10. Demonstrate the method for applying bandages
11. Demonstrate the method for applying a pressure dressing.
12. Demonstrate the method for applying pressure points.

Contextual (When, Where, Why)

External bleeding is assessed during the initial assessment after securing the scene and ensuring personal safety. After ensuring airway and breathing, control of arterial or venous bleeding will be done upon immediate identification.

Soft tissue injuries, unless life threatening, will be treated after the initial assessment. Failure to treat soft tissue injuries could lead to continued bleeding, further damage to the injury, or further contamination.

Student Activities

Auditory (Hearing)

1. Students should hear presentations that identify signs and symptoms of external bleeding.
2. The student should hear presentations that identify signs and symptoms of soft tissue injuries and procedures for treating soft tissue injuries.

Visual (Seeing)

1. The students should see visual representations of the various types of external bleeding.
2. The student should see visual representations of the proper methods to control bleeding.
3. The students should see the application of direct pressure, elevation, and pressure points in the first aid of external bleeding.
5. The student should see visual representations of the various types of soft tissue injuries.
6. The student should see demonstrations of the treatment of an open soft tissue injury.
7. The student should see demonstrations of necessary body substance isolation when dealing with soft tissue injuries.
8. The student should see demonstrations of the proper method for applying an airtight dressing.
9. The student should see demonstrations of the proper method for stabilizing an impaled object.
10. The student should see visual representations of superficial, partial thickness, and full thickness burn.
11. The student should see visual representations of the first aid for superficial, partial thickness, and full thickness burns.
12. The student should see the various types of dressing and bandages.
13. The student should see demonstrations of the methods for applying a dressing.
14. The student should see demonstrations of the method for applying bandages.

Kinesthetic (Doing)

1. The student should practice first aid for open soft tissue injuries.
2. The student may practice first aid for an impaled object.

Module 5: Illness and Injury

Lesson 5-2: Bleeding, Shock and Soft Tissue Injuries

3. The student may practice the first aid for burns.
4. The student may practice the first aid for an amputation.
5. The student may practice the first aid for an amputated part.
6. The student may practice the first aid for exposure to fire and hot gases.
7. The student may practice the first aid for a chemical burn.
8. The student may practice the first aid for an electrical burn.

Instructor Activities

Facilitate discussion and supervise practice.

Reinforce student progress in cognitive, affective, and psychomotor domains.

Redirect students having difficulty with content.

Evaluation

Evaluate the actions of First Aid students during role play, practice or other skill stations to determine their comprehension of the cognitive and affective objectives and reasonable proficiency with the psychomotor objectives.

Remediation

Identify students or groups of students who are having difficulty with this subject content.

Enrichment

Address unique student requirements or local area needs concerning this topic.

Lesson 5-3

Injuries to Muscles and Bones

Objectives

Objectives Legend

C=Cognitive A=Affective P=Psychomotor
1 = Knowledge level
2 = Application level
3 = Problem-solving level

Cognitive Objectives

At the completion of this lesson, the First Aid student will be able to:

- 5-3.1 Describe the function of the muscles and bones. (C-1)
- 5-3.2 Describe an open and a closed painful, swollen, or deformed extremity. (C-1)
- 5-3.3 Describe the first aid for an injured person with a painful, swollen, or deformed extremity. (C-1)
- 5-3.4 Explain the mechanism of injury as a possible cause of head and spine trauma. (C-3)
- 5-3.5 Describe signs and symptoms of a possible spine injury. (C-1)
- 5-3.6 Describe the first aid for an injured person with a possible spine injury. (C-1)
- 5-3.7 Describe signs and symptoms of head injury. (C-1)
- 5-3.8 Describe the first aid for head injuries. (C-1)

Affective Objectives

At the completion of this lesson, the First Aid student will be able to:

- 5-3.9 Demonstrate a caring attitude towards ill or injured persons with a muscle and/or bone injury. (A-3)
- 5-3.10 After assuring rescuer safety, place the interests of the person with a muscle or bone injury as the foremost consideration when making emergency care decisions. (A-3)

Psychomotor Objectives

At the completion of this lesson, the First Aid student will be able to:

- 5-3.11 Demonstrate first aid for a painful, swollen, or deformed extremity. (P-1,2)
- 5-3.12 Demonstrate opening the airway when spinal cord injury is suspected. (P-1,2)
- 5-3.13 Demonstrate manual stabilization of the cervical spine. (P-1,2)

Preparation

Motivation:

Injuries to the bones and muscles are common types of injuries that may be encountered by the First Aid Provider. These injuries are largely non-life threatening. Prompt recognition and first aid for muscle and bone injuries is important in reducing pain, preventing further injury and minimizing permanent damage.

Prerequisites:

Preparatory, Airway, Ill or injured person Assessment, and Circulation Modules

Materials

AV Equipment:

Utilize various audio-visual materials relating to first aid. The continuous development of new audio-visual materials relating to first aid requires careful review to determine which best meet the needs of the program. Materials should be edited to ensure that the objectives of these guidelines are met.

Equipment (optional):

Blanket, pillow, improvised splinting material, e.g. magazines, etc.

Recommended Minimum Time to Complete:

See page 12 of *Course Guide*

Presentation

Declarative (What)

- I. Review of Muscles and bones
 - A. The Skeletal System
 - 1. Function
 - a. Gives the body shape
 - b. Protects vital internal organs
 - 2. Components
 - a. Skull - contains and protects the brain
 - b. Face
 - c. Spinal Column
 - d. Chest/Abdomen
 - e. Pelvis
 - f. Legs
 - g. Arms
 - h. Joints - where bones connect to other bones
 - B. The Muscular System
 - 1. Function
 - a. Give the body shape.
 - b. Protect internal organs.
 - c. Provide for movement.
- II. Injuries to Bones and Joints
 - A. Mechanism of Injury (MOI)
 - 1. Direct force
 - 2. Indirect force
 - 3. Twisting force
 - B. Bone or joint injuries
 - 1. Types
 - a. Open - break in the continuity of the skin
 - b. Closed - no break in the continuity of the skin
 - 2. Signs and symptoms
 - a. Deformity
 - b. Pain and tenderness
 - c. Swelling
 - e. Bruising (discoloration)

Module 5: Illness and Injury

Lesson 5-3: Injuries to Muscles and Bones

- i. Exposed bone ends
 - j. Joint locked into position
 - 3. First aid for bone or joint injuries
 - a. Body substance isolation.
 - b. After life threats have been controlled, allow injured person to remain in a position of comfort.
 - c. Application of cold pack to area of painful, swollen, or deformed extremity to reduce swelling and pain.
 - d. Manual stabilization.
 - (1) Support above and below an injury with manual stabilization.
 - (2) Cover open wounds with a sterile dressing.
 - (3) When in doubt, manually stabilize the injury
- III. Injuries to the Spine
 - A. Mechanism of injury
 - 1. Motor vehicle crashes
 - 2. Pedestrian - vehicle collisions
 - 3. Falls
 - 4. Blunt trauma
 - 5. Penetrating trauma to head, neck, or torso
 - 6. Diving accidents
 - 7. Unresponsive persons with trauma
 - B. Signs and symptoms
 - 1. Tenderness in the area of injury
 - 2. Pain associated with moving
 - a. Do not ask the injured person to move to try to find a pain response.
 - b. Do not move the injured person to test for a pain response.
 - 3. Pain independent of movement or palpation
 - a. Along spinal column
 - b. Lower legs
 - c. May be intermittent
 - 4. Soft tissue injuries associated with trauma
 - a. Head and neck to cervical spine
 - b. Shoulders, back or abdomen
 - c. Lower extremities
 - 5. Numbness, weakness or tingling in the extremities
 - 6. Loss of sensation or paralysis.
 - 7. Breathing problems
 - 8. Loss of bladder and/or bowel control
 - 9. Pain and loss of function usually accompany a spinal injury but the absence of pain does not mean that the ill or injured person has not been significantly injured.

Module 5: Illness and Injury

Lesson 5-3: Injuries to Muscles and Bones

- C. Assessing for possible spine injury
 - 1. Responsive ill or injured person
 - a. Mechanism of injury
 - b. Tell the person not to move their head and neck, then ask;
 - (1) What happened?
 - (2) Does your neck or back hurt?
 - (3) Where does it hurt?
 - 2. Unresponsive injured person
 - a. Maintain open airway and assess breathing
 - b. Stabilize head and neck manually in the position found
 - D. Complications
 - a. Inadequate breathing effort
 - b. Paralysis
 - E. Role of the First Aid Provider:
 - a. Complete the First Aid Provider assessment
 - (1) Complete a scene assessment and use appropriate BSI equipment before initiating first aid.
 - (2) Complete an initial assessment on injured person
 - a. Maintain manual manual stabilization of head and neck.
 - b. Maintain open airway and assess breathing
 - c. A single First Aid Provider should stabilize head and neck manually in the position found until EMS arrives
 - d. If additional First Aid Providers are available, they may perform physical and ongoing assessments.
 - e. The initial First Aid Provider must continue to maintain manual stabilization of the head and neck.
 - (3) Assure that EMS has been activated.
 - (4) Comfort, calm, and reassure the injured person while awaiting EMS.
-
- IV. Injuries to the Brain and Skull
 - A. Head injuries
 - 1. May be open or closed
 - a. Open injuries may be bleeding
 - b. Closed injury may have swelling or depression of skull
 - 2. Injuries to the scalp
 - a. May bleed more than expected because of the large number of blood vessels in the scalp.
 - b. Control bleeding with direct pressure.
 - c. Injury to the brain may cause a lowered level of responsiveness.
 - d. The level of responsiveness can decrease rapidly and lead to respiratory arrest.
 - 3. Role of the First Aid Provider:
 - a. Complete the First Aid Provider assessment
 - (1) Complete a scene assessment and use appropriate BSI equipment before initiating first aid.
 - (2) Complete an initial assessment on ill or injured person
 - a. Maintain manual stabilization of head and neck.
 - b. Maintain open airway and assess breathing

Module 5: Illness and Injury

Lesson 5-3: Injuries to Muscles and Bones

- c. A single First Aid Provider should stabilize head and neck manually in the position found until EMS arrives.
 - d. If additional First Aid Providers are available, they may perform physical and ongoing assessments.
 - e. The initial First Aid Provider must continue to maintain manual stabilization of the head and neck and closely monitor the level of responsiveness.
 - f. Apply enough pressure to control the bleeding, without causing additional injury.
 - g. If possible, dress and bandage open wound as indicated in the first aid of soft tissue injuries.
 - h. Be prepared for changes in condition of ill or injured person.
- (3) Assure that EMS is Activated.
- (4) Comfort, calm, and reassure the ill or injured person while awaiting EMS.

Application

Procedural (How)

1. Show visual representations of the muscles and bones.
2. Show visual representations of open and closed bone and joint injuries.
3. Demonstrate manual stabilization techniques.

Contextual (When, Where, Why)

Injuries to bones and joints require stabilization unless life-threatening conditions are present. If life-threatening conditions are present, ignore extremity injuries and address the immediate problem.

An unstable bone or joint injury can result in: damage to soft tissue, organs, nerves, muscles; increased bleeding associated with the injury; permanent damage or disability; conversion of a closed injury to an open injury; and an increase in pain.

Student Activities

Auditory (Hearing)

1. The student should hear simulations involving muscle and bone injuries and the necessary first aid.

Visual (Seeing)

1. The student should see visual representations of muscles and bones.
2. The student should see visual representations of open and closed bone and joint injuries.
4. The student should see a demonstration of manual stabilization.

Kinesthetic (Doing)

1. The student should practice manual stabilization.

Instructor Activities

Facilitate discussion and supervise practice.

Module 5: Illness and Injury

Lesson 5-3: Injuries to Muscles and Bones

Reinforce student progress in cognitive, affective, and psychomotor domains.
Redirect students having difficulty with content.

Evaluation

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